

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number  
**WO 2004/055041 A3**

(51) International Patent Classification<sup>7</sup>: **A61K 38/16**,  
A61P 31/00

(21) International Application Number:  
PCT/US2003/040221

(22) International Filing Date:  
15 December 2003 (15.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/433100 13 December 2002 (13.12.2002) US

(71) Applicant (for all designated States except US): **CASE  
WESTERN RESERVE UNIVERSITY** [US/US]; 10900  
Euclid Avenue, Cleveland, OH 44106-7219 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **WEINBERG, Aaron**  
[US/US]; 2973 Montgomery Road, Shaker Heights, OH  
44122 (US).

(74) Agents: **QUISEL, John, D.** et al.; Ropes & Gray LLP, One  
International Place, Boston, MA 02110-2624 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the International search report:  
28 October 2004

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: DEFENSIN-INDUCING PEPTIDES FROM FUSOBACTERIUM

(57) Abstract: The application provides, in part, novel polypeptides and nucleic acids that affect induction of defensins, and methods of making and using same.

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/40221

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 A61K38/16 A61P31/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, BIOSIS, EMBASE, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KAPATRAL V ET AL: "Genome sequence and analysis of the oral bacterium <i>Fusobacterium nucleatum</i> strain ATCC 25586" JOURNAL OF BACTERIOLOGY, WASHINGTON, DC, US, vol. 184, no. 7, April 2002 (2002-04), pages 2005-2018, XP002292909 ISSN: 0021-9193 see the whole document	1-37
A	& DATABASE EMBL 1 June 2002 (2002-06-01), retrieved from EBI accession no. Q8RI44 abstract	1-37
A	& DATABASE EMBL 1 June 2002 (2002-06-01), retrieved from EBI accession no. Q8RIP4 abstract	1-37
A	& DATABASE EMBL 1 June 2002 (2002-06-01), retrieved from EBI accession no. Q8RIP2 abstract	1-37
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*&\* document member of the same patent family

Date of the actual completion of the international search

10 September 2004

Date of mailing of the international search report

17/09/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Merckling-Ruiz, V

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/40221

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	& DATABASE EMBL 1 June 2002 (2002-06-01), retrieved from EBI accession no. Q8RGM7 abstract	1-37
A	----- WO 99/64439 A (UNIV CASE WESTERN RESERVE ; WEINBERG AARON (US); DALE CRUNK BEVERLY A) 16 December 1999 (1999-12-16) see claims 1-8, page 1 and pages 10-11	1-37
A	----- "Measuring mRNA or cDNA of eotaxin, RANTES or beta-defensin-2, a reagent for it and screening of an anti-inflammatory agent, a kit for the measurement of mRNA or cDNA, an anti-inflammatory agent" DERWENT, 2 July 2002 (2002-07-02), XP002292910 abstract	
A	----- WO 01/38349 A (CONEJO JOSE RAMON ; ADERMANN KNUT (DE); NEHLS MICHAEL (DE); KLUEVER EN) 31 May 2001 (2001-05-31) see abstract and page 3 last paragraph	1-37
A	----- HARDER J ET AL: "Isolation and characterization of human beta -defensin-3, a novel human inducible peptide antibiotic" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 276, no. 8, 23 February 2001 (2001-02-23), pages 5707-5713, XP002206911 ISSN: 0021-9258 see abstract and page 5710	1-37
A	----- JOSE-RAMON CONEJO GARCIA ET AL: "Identification of a novel, multifunctional beta-defensin (human beta-defensin 3) with specific antimicrobial activity. Its interaction with plasma membranes of Xenopus oocytes and the induction of macrophage chemoattraction" CELL AND TISSUE RESEARCH, BERLIN, DE, vol. 306, no. 2, November 2001 (2001-11), pages 257-264, XP002206910 see abstract and page 259 right col. to page 260 left col.	1-37

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/40221

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claims 1-37 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the composition.
2. ☒ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

## Continuation of Box I.1

Although claims 1-37 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the composition.

## Continuation of Box I.2

Present claims 35-36 relate to an extremely large number of possible screening methods. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the compounds methods claimed. What is actually disclosed in the application are the beta-defensin inducing properties of an extract of Fusobacterium comprising specific polypeptides. This effect cannot be generalised to all cellular extracts of all commensal microorganisms. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to screening methods using extracts of Fusobacterium.

Claims 14 and 18-19 were searched partiall because the expression "beta-defensin associated disorder" is not clear. The search was limited to the diseases/conditions cited on page 3 of the application.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/40221

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9964439	A	16-12-1999	AU	4564599 A		30-12-1999
			WO	9964439 A2		16-12-1999
WO 0138349	A	31-05-2001	DE	19957043 A1		07-06-2001
			AU	2359301 A		04-06-2001
			WO	0138349 A2		31-05-2001